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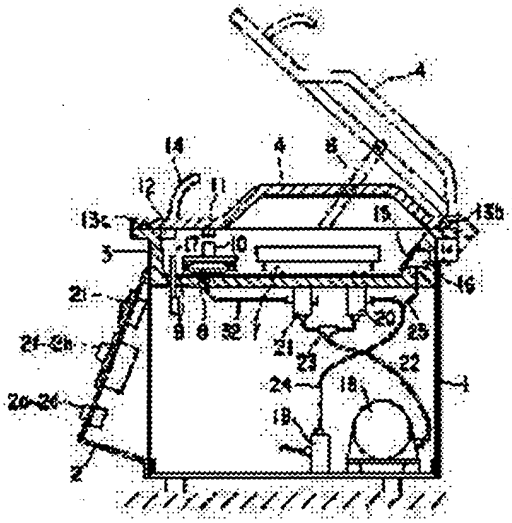
(54) VACUUM PACKAGING DEVICE

(57)Abstract:
PURPOSE: To reduce an installation space for a device and to improve workability by a method wherein a metering device is integrally formed in a chamber for a device to effect vacuum package of a package.
CONSTITUTION: A chamber comprising a lower chamber 3 and an upper chamber 4 openable based on the lower chamber 3 is attached on a casing 1. A load cell type metering device 7 and an air bag 8 are incorporated in the lower chamber 3. A heat seal 10 is attached on the air bag 8 through a protection member 9. A detecting switch 12 to detect the closed state of the upper chamber 4 is arranged to the lower chamber 3. A vacuum pump 18 to bring the interior of the chamber into a vacuum, a solenoid valve 20 for a vacuum located between the vacuum pump 18 and the chamber, and a solenoid 21 for heat seal located between the vacuum pump 18 and the air bag 8 are contained in the casing 1.



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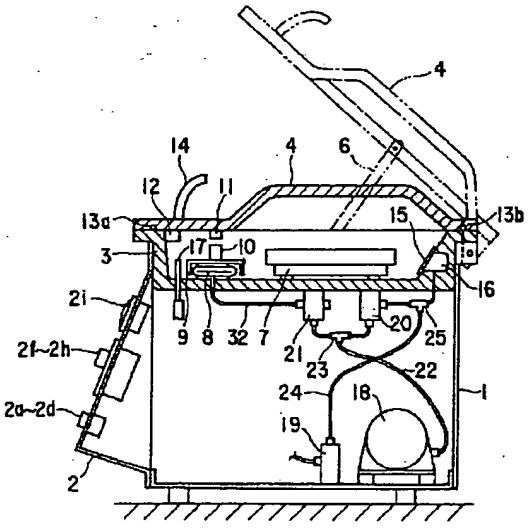
(54)【発明の名称】　真空包装装置

(57)【要約】
【目的】包装物を真空包装する装置のチャンバー内に計量装置を一体化することにより装置の設置スペースを小さくするとともに作業性を向上する。
【構成】筐体１の上にロアーチャンバー３とこのロアーチャンバーに対して開閉自在なアッパーチャンバー４からなるチャンバーを取付け、ロアーチャンバー内にロードセル式計量装置７及びエアーバック８を内蔵している。そしてエアーバックの上に保護部材９を介してヒートシール１０を取付けている。ロアーチャンバーにはアッパーチャンバーの閉塞状態を検出する検出スイッチ１２を設け、筐体内にはチャンバー内を真空にするための真空ポンプ１８、この真空ポンプとチャンバーとの間に介在する真空用電磁弁２０、真空ポンプとエアーバックとの間に介在するヒートシール用電磁弁２１を収納している。



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【特許請求の範囲】

【請求項１】　袋に収納された包装物を開閉自在なチャンバー内に収納し、そのチャンバー内を真空状態にして真空包装する真空包装装置において、前記チャンバー内に重量検知機構を内蔵し、前記包装物をその重量検知機構で計量することを特徴とする真空包装装置。

【請求項２】　開閉自在なチャンバーと、このチャンバー内に内蔵された重量検知機構と、前記チャンバーの開閉機構と、前記チャンバー内を真空にする真空機構と、前記チャンバーの開放状態において前記重量検知機構により袋に収納された包装物の計量が行われ計量完了信号が出力されると、前記開閉機構を駆動して前記チャンバーを閉塞させる手段と、前記開閉機構による前記チャンバーの閉塞が完了すると前記真空機構を駆動する手段と、前記真空機構による真空動作が完了すると前記袋をシールする手段と、この手段によるシール動作が完了すると前記開閉機構を駆動して前記チャンバーを開放させる手段とを設けたことを特徴とする真空包装装置。

【請求項３】　袋に収納された包装物を開閉自在なチャンバー内に収納し、そのチャンバー内を真空状態にして真空包装する真空包装装置において、前記チャンバー内に重量検知機構を内蔵するとともに包装物の単品毎に真空度データを設定したメモリを設け、前記包装物をその重量検知機構で計量するとともに、その計量した包装物に対応した真空度データを前記メモリから読出し、その真空度データに基づいて前記チャンバー内を真空状態にすることを特徴とする真空包装装置。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、重量検知機構を内蔵した真空包装装置に関する。

【０００２】

【従来の技術】従来、真空包装装置は、チャンバー内に袋に収納された包装物を収納し、チャンバーを閉じた状態で真空機構を駆動してチャンバー内を真空状態にし、その後袋をシールして真空包装を行っていた。

【０００３】

【発明が解決しようとする課題】このため包装物を真空パックし、かつ計量するには真空包装装置と計量装置の両方を用意しなければならず、装置の設置スペースが大きくなるとともに作業が面倒となる問題があった。

【０００４】そこで本発明は、包装物を真空パックするとともに計量する場合に、装置の設置スペースを小さくできるとともに作業性を向上できる真空包装装置を提供しようとするものである。また本発明は、さらに作業性を向上できる真空包装装置を提供しようとするものである。また本発明は、単品毎に設定された真空度に応じた精度の高い真空包装ができる真空包装装置を提供しようとするものである。

【０００５】

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【課題を解決するための手段】請求項１対応の発明は、袋に収納された包装物を開閉自在なチャンバー内に収納し、そのチャンバー内を真空状態にして真空包装する真空包装装置において、チャンバー内に重量検知機構を内蔵し、包装物をその重量検知機構で計量するものである。

【０００６】請求項２対応の発明は、開閉自在なチャンバーと、このチャンバー内に内蔵された重量検知機構と、チャンバーの開閉機構と、チャンバー内を真空にする真空機構と、チャンバーの開放状態において重量検知機構により袋に収納された包装物の計量が行われ計量完了信号が出力されると、開閉機構を駆動してチャンバーを閉塞させる手段と、開閉機構によるチャンバーの閉塞が完了すると真空機構を駆動する手段と、真空機構による真空動作が完了すると袋をシールする手段と、この手段によるシール動作が完了すると開閉機構を駆動してチャンバーを開放させる手段とを設けたものである。

【０００７】請求項３対応の発明は、袋に収納された包装物を開閉自在なチャンバー内に収納し、そのチャンバー内を真空状態にして真空包装する真空包装装置において、チャンバー内に重量検知機構を内蔵するとともに包装物の単品毎に真空度データを設定したメモリを設け、包装物をその重量検知機構で計量するとともに、その計量した包装物に対応した真空度データをメモリから読出し、その真空度データに基づいてチャンバー内を真空状態にするものである。

【０００８】

【作用】このような構成の本発明においては、１台の装置で包装物の計量と真空包装ができる。

【０００９】すなわちチャンバーの開放状態において重量検知機構により袋に収納された包装物を計量する。そして計量が完了して計量完了信号が出力されると、開閉機構が駆動してチャンバーが閉塞され、チャンバーの閉塞が完了すると真空機構が駆動してチャンバー内が真空にされる。そして真空動作が完了すると袋がシールされ、このシール動作が完了すると開閉機構が駆動してチャンバーが開放される。またチャンバー内の真空の度合いが計量する包装物に対応した真空度データに基づいて決定される。

【００１０】

【実施例】以下、本発明の実施例を図面を参照して説明する。

【００１１】図１は外観を示す斜視図で、筐体１の前面には操作パネルユニット２が取付けられ、筐体１の上にはロアーチャンバー３とこのロアーチャンバー３に対して開閉自在なアッパーチャンバー４からなるチャンバーが取付けられている。

【００１２】前記操作パネルユニット２には、電源スイッチ２ａ、ホールド用スイッチ２ｂ、ジャンプ用スイッチ２ｃ、ガス用スイッチ２ｄ、秤用キーボード２ｅ、真

空タイマー２ｆ、シールタイマー２ｇ、ガスタイマー２ｈ、真空計２ｉ、表示器２ｊ、ラベル発行口２ｋが設けられている。

【００１３】前記筐体１の一側面には扉５が設けられている。前記筐体１の他側面と前記アッパーチャンバー４の間にはアッパーチャンバー４の開閉機構の一部を構成するアーム６が取付けられている。

【００１４】そして図２に示すように、前記ロアーチャンバー３内には重量検知機構としてのロードセル式計量装置７、エアーバック８が内蔵されている。前記エアーバック８の上には保護部材９を介してヒータで構成されたヒートシール１０が取付けられている。前記ヒートシール１０と対向するアッパーチャンバー４の内側には支持部材１１が取付けられている。また前記ロアーチャンバー３内には前記アッパーチャンバー４の閉塞状態を検出する検出スイッチ１２が設けられている。

【００１５】前記アッパーチャンバー４の先端部と後端部の内側には機密性を保持するためのＯリング１３ａ，１３ｂが設けられ、また先端部の外側には把手１４が設けられている。前記ロアーチャンバー３内の後端にはフィルタ１５を介して排気口１６が設けられている。前記ロアーチャンバー３の底部先端側にはガス接続管１７が設けられている。

【００１６】前記筐体１内には底部に真空機構を構成する真空ポンプ１８、真空破壊弁１９が収納され、また前記ロアーチャンバー３の底部外側には真空用電磁弁２０、ヒートシール用電磁弁２１が取付けられている。前記真空ポンプ１８と真空用電磁弁２０及びヒートシール用電磁弁２１とはホース２２によって途中分岐管２３を介して連通され、前記真空破壊弁１９と排気口１６及び真空用電磁弁２０とはホース２４によって途中分岐管２５を介して連通されている。前記ヒートシール用電磁弁２１はホース３２を介して前記エアーバック８に連通している。

【００１７】また前記筐体１内には図３に示すように、ガス用電磁弁２６が収納され、そのガス用電磁弁２６はホース２７を介して前記ガス接続管１７に連通するとともに、ホース２８を介して外部に突出されたガス取入れ管２９に連通している。また前記筐体１内には回路部品を配置した回路基板３０が基板取付金具３１に固定されて収納されている。前記回路基板３０の回路部品は前記ロードセル式計量装置７のロードセル、前記真空ポンプ１８、前記操作パネルユニット２の各部品等とリード線により接続されている。

【００１８】前記ロードセル式計量装置７の台７ａの上にはプラスチック袋３３に収納された包装物３４が載置されるようになっている。そして前記プラスチック袋３３の開口部側は前記ヒートシール１０と支持部材１１との間を通して配置され、その先端開口部には前記ガス接続管１７が挿入されるようになっている。

【００１９】また前記筐体１内には図４に示すように、ラベルプリンタユニット３５が収納されている。前記ラベルプリンタユニット３５はラベルロール３６から送出される台紙付ラベル用紙３７に対してプリンタ３８でデータを印字し、前記ラベル発行口２ｋからラベル３９を発行するとともに台紙４０を巻取ロール４１で巻き取るようになっている。

【００２０】さらに前記筐体１内側壁には図５に示すように、真空開放弁４２が固定され、この真空開放弁４２はホース４３を介して前記真空破壊弁１９に連通するとともにホース４４を介してサイレンサー４５にも連通している。前記真空開放弁４２は筐体１の外部に取付けられたつまみ４６によって弁の開放度合いが調整できるようになっている。

【００２１】前記チャンバー３，４、真空ポンプ１８、各弁１９，２０，２１，２６，４２の連通関係を模式的に示すと図６に示すようになる。ガス用電磁弁２６は外部においてガスボンベ４７と連通されることになる。なお、図中実線の矢印は真空用電磁弁２０、ヒートシール用電磁弁２１、ガス用電磁弁２６の開放時の空気及びガスの流れを示し、また図中点線の矢印は真空破壊弁１９の開放時の空気の流れを示している。

【００２２】図７は回路構成を示すブロック図で、５１は制御部本体を構成するＣＰＵ（中央処理装置）、５２はこのＣＰＵ５１が各部を制御するプログラムデータが格納されたＲＯＭ（リード・オンリー・メモリ）、５３は単価、品名、部門コード、ガス注入の有無等からなるＰＬＵデータ及び真空度データが単品毎に設定されたＰＬＵファイル、印字バッファ、表示バッファ等が設定されたＲＡＭ（ランダム・アクセス・メモリ）、５４は前記ロードセル式計量装置７からのアナログな重量信号をデジタル変換して取り込むＡ／Ｄ変換器、５５は前記表示器２ｊに表示データを出力して表示制御を行う表示コントローラ、５６は前記プリンタ３８を制御してラベル３９へのデータ印字を行なわせるプリンタコントローラ、５７は前記秤用キーボード２ｅからのキー信号取り込みを行うキーボードコントローラである。

【００２３】また５８は前記各種スイッチ２ａ～２ｄ、２ｆ～２ｈ並びに前記真空計２ｉと接続され、前記各種スイッチ２ａ～２ｄ、２ｆ～２ｈ、１２からのスイッチ信号を入力処理すると共に前記真空計２ｉの駆動信号を出力処理するＩ／Ｏポート、５９は前記アーム６を駆動して前記アッパーチャンバー４を開閉動作する開閉機構６０と接続されたＩ／Ｏポート、６１は前記シール電磁弁２１を制御するシールタイマ、６２は前記真空ポンプ１８を制御するポンプコントローラ、６３は前記真空用電磁弁２０を制御する真空タイマ、６４は前記真空破壊弁１９を制御する真空破壊タイマ、６５は前記ガス用電磁弁２６を制御するガスタイマである。

【００２４】前記ＣＰＵ５１とＲＯＭ５２、ＲＡＭ５

3、A／D変換器54、各コントローラ55，56，57，62、各I／Oポート58，59、各タイマ61，63，64，65とはバスライン66によって電気的に接続されている。

【0025】前記CPU51はROM52内のプログラムデータに基づいて図8に示す制御を行うようになっている。まずRAM53等の各種初期化を行い、続いて前記表示器2jの表示スキャンを行って表示チェックを行う。続いて計量装置7から取り込んだデータがゼロ点範囲に入っているか否かをチェックする。そしてゼロ点範囲に入っていればオートゼロ処理を行う。

【0026】以上の前処理が終了すると計量装置7による計量動作が可能となる。この状態ではA／D変換器54から重量データを取り込みデータ処理を行う。また各スイッチ2a～2d，2f～2hのステータスを読み込む。続いてモードが設定モードか、登録モードか、それ以外のモードかをチェックし、設定モードであれば設定処理を行い、登録モードであれば登録処理を行う。

【0027】設定処理は図9に示すように、PLU設定モードか否かをチェックし、PLU設定モードでなければ他の設定処理を行う。またPLU設定モードであれば続いて秤用キーボード2eからのキー入力があるか否かをチェックし、キー入力がPLUデータのキー入力であればPLUデータの設定を行う。すなわちRAM53のPLUファイルに対して単品毎の品名、単価、部門コード、ガス注入の有無等を設定する。そして設定されたデータをその都度表示器2jに表示させる。またキー入力が真空度データのキー入力であれば真空度データの設定を行う。すなわちRAM53のPLUファイルに対して単品毎の真空度データを設定する。そして設定されたデータをその都度表示器2jに表示させる。

【0028】登録処理は図10に示すようにまず秤用キーボード2eからのキー入力があるか否かをチェックし、キー入力がPLUの指定キーであればPLUファイルから指定されたPLUデータ及び真空度データを読み込む。続いて重量データの取込みが行われたか否かをチェックし、重量データが取込まれていれば重量データが安定するのを待ってから、重量×単価により値段を算出する。そして重量、単価、値段、品名、部門コード等の表示データを表示バッファにセットするとともに印字バッファにセットする。そしてプリンタユニット35を駆動しプリンタ38によりラベル39にデータを印字してラベル発行を行うとともに計量完了信号が発生する。

【0029】計量完了信号が発生すると、I／Oポート59を介して開閉機構60を駆動して前記アッパーチャンバー4を閉塞させる。そして前記検出スイッチ12のスイッチ信号により、アッパーチャンバー4が閉じたか否かをチェックする。アッパーチャンバー4が閉じると、続いて前記ポンプコントローラ62を制御して真空ポンプ18を駆動させるとともに真空タイマ63により真空用電磁弁20を開放させる。

【0030】そしてチャンバー内の真空度とPLUファイルから読み出された真空度データを比較し、チャンバー内の真空度が真空度データに一致すると、真空ポンプ18を停止制御する。続いてガス注入の有無をチェックし、ガス注入有りであればガスタイマ65でガス用電磁弁26を一定時間開放してガスボンベ47の不活性ガスをガス接続管17を介してプラスチック袋33内に供給する。続いてシールタイマ61によりシール電磁弁21の片方を開放して外部の空気をエアーバック8に供給する。これによりエアーバック8が膨らんでヒートシール10が上昇し、プラスチック袋33をヒートシール10と支持部材11で挟んでプラスチック袋33を加熱溶着させシールする。そしてシールタイマ61がタイムアップするとシール電磁弁21が閉じ同時に真空用電磁弁20も閉じ、さらに真空破壊弁19が開放してチャンバー内に空気が供給される。このときの空気の吸引の音はサイレンサ45によって抑制される。

【0031】そして最後にI／Oポート59を介して開閉機構60が動作されアッパーチャンバー4が開放される。なお、真空開放弁42は前記アッパーチャンバー4の開閉動作の早さ、すなわちチャンバー内の真空を大気圧に戻す早さを調整するためのもので、その調整はつまみ46によって行われる。

【0032】なお、チャンバー内が真空ポンプ18により真空制御されているときに前記ホールド用スイッチ2bを操作すると、チャンバー内がそのときの真空度でホールドされ、この状態で再度ホールド用スイッチ2bを操作すると真空ポンプ18による真空制御が引き続き継続されるようになっている。

【0033】またチャンバー内が真空ポンプ18により真空制御されているときに前記ジャンプ用スイッチ2cを操作すると、真空工程が直ちに終了して次の工程、すなわちガス注入があるときにはガス注入工程へ、またガス注入が無いときにはシール工程へジャンプするようになっている。

【0034】このような構成の実施例においては、アッパーチャンバー4が開いている状態で、まずプラスチック袋33内に包装物34を収納して計量装置7に載せる。そして秤用キーボード2eを操作して包装物34に対応するPLU指定を行う。これによりPLUファイルから包装物34に対応する品名、単価、部門コード、ガス注入の有無、真空度データが読み出される。そして重量×単価により値段が算出される。こうして重量、品名、単価、部門コードが表示器2jに表示される。また重量、品名、単価、部門コードがプリンタ38によりラベル39に印字されてラベル発行が行われる。

【0035】以上のラベル発行動作が終了すると計量完了信号が発生し、これにより開閉機構60が動作してアッパーチャンバー4を閉塞させる。そしてアッパーチャ

ンバー4の閉塞が検出スイッチ12により確認されると、ポンプコントローラ62により真空ポンプ18が動作されると共に真空タイマ63により真空用電磁弁20が開放される。こうしてチャンバー内の空気が抜かれ真空度が高められる。そしてチャンバー内の真空度が読み出された真空度データに一致すると、真空ポンプ18の動作が停止される。

【0036】続いてガス注入の有無がチェックされ、もしガスを注入することが設定されていれば、ガスタイマ65によりガス用電磁弁26が一定時間開放されてガスボンベ47から不活性ガスがプラスチック袋33内に供給される。

【0037】その後シールタイマ61によりシール電磁弁21の片方が開放されて外部の空気がエアーバック8に供給され、ヒートシール10によりプラスチック袋33がシールされる。そしてシールタイマ61がタイムアップするとシール電磁弁21が閉じられ、また真空用電磁弁20も閉じられ、さらに真空破壊弁19が開放されてチャンバー内に空気が供給される。そして最後に開閉機構60によりアッパーチャンバー4が開放される。しかしてチャンバー内から真空パックされた包装物を取出し、外部に発行されたラベル39を貼れば1個の商品の真空包装作業が終了することになる。

【0038】このようにチャンバー内に計量装置7を一体に組込むことによって全体を1つの装置内にコンパクトにまとめることができ、必要とする装置の設置スペースを小さくできるとともに、作業時間の短縮や作業の容易性を図ることができて作業性を向上できる。

【0039】また計量装置7による計量が終了すると、ラベル発行が行われると共にアッパーチャンバー4が自動的に閉塞して真空包装動作が開始され、真空包装が終了するとアッパーチャンバー4が自動的に開放するので、操作がきわめて簡単となり、作業性をさらに向上できる。またPLUファイルに単品毎に真空度データを予め設定し、その真空度データに基づいた真空度で真空包装ができるので、精度の高い真空包装ができる。

【0040】さらにチャンバー内が真空ポンプ18により真空制御されているときにホールド用スイッチ2bを操作すると、チャンバー内をそのときの真空度でホールドでき、またチャンバー内が真空ポンプ18により真空制御されているときにジャンプ用スイッチ2cを操作すると、真空工程が直ちに終了して次の工程へジャンプできるので、設定されている制御以外の制御も簡単に行うことができ、制御の自由度を向上できる。

【0041】

【発明の効果】以上詳述したように本発明によれば、包装物を真空パックするとともに計量する場合に、装置の設置スペースを小さくできるとともに作業性を向上できる真空包装装置を提供できるものである。また本発明によれば、作業性をさらに向上できる真空包装装置を提供できるものである。また本発明によれば、単品毎に設定された真空度に応じた精度の高い真空包装ができる真空包装装置を提供できるものである。

【図面の簡単な説明】

【図1】本発明の実施例の外観を示す斜視図。

【図2】同実施例の内部構成を示す断面図。

【図3】同実施例の内部構成を示す断面図。

【図4】同実施例の内部構成を示す断面図。

【図5】同実施例の構成を示す一部断面した正面図。

【図6】同実施例のチャンバー、真空ポンプ及び各弁の連通関係を模式的に示す図。

【図7】同実施例の回路構成を示すブロック図。

【図8】同実施例のCPUによるメイン処理を示す流れ図。

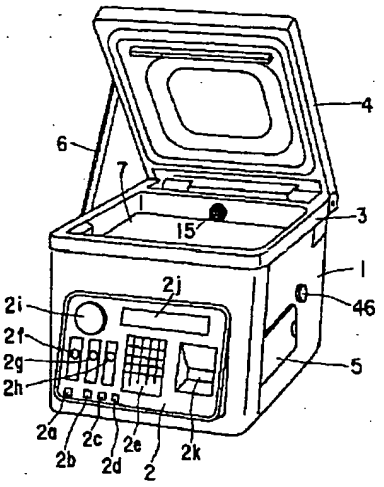
【図9】図8における設定処理を示す流れ図。

【図10】図8における登録処理を示す流れ図。

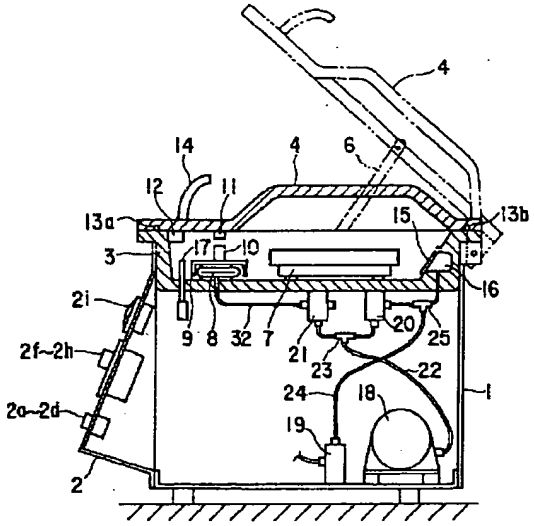
【符号の説明】

1…筐体、3…ロアーチャンバー、4…アッパーチャンバー、2e…秤用キーボード、7…ロードセル式計量装置、10…ヒートシール、12…検出スイッチ、18…真空ポンプ、20…真空用電磁弁、21…シール用電磁弁、33…プラスチック袋、34…包装物、35…プリンタユニット、51…CPU（中央処理装置）、60…開閉機構。

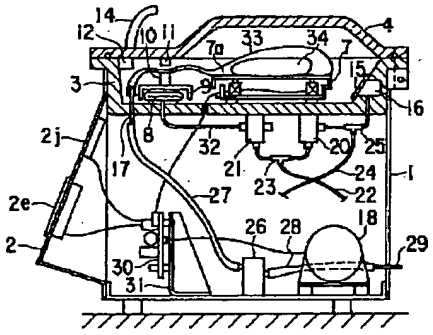
【図１】


4
6
7
1
15
3
1
2j
46
2i
2f
2g
2h
5
2a
2b
2c
2d
2e
2
2k

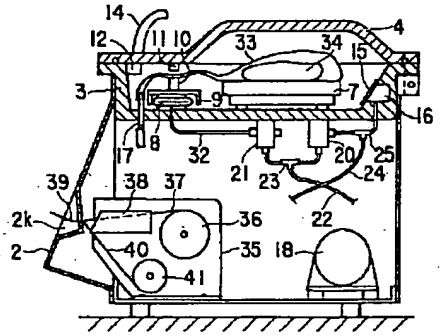
【図２】


4
14
4
6
12
11
13a
15
13b
3
17
10
16
2i
9
8
32
7
21
20
25
2f~2h
23
22
24
18
1
2a~2d
19
2

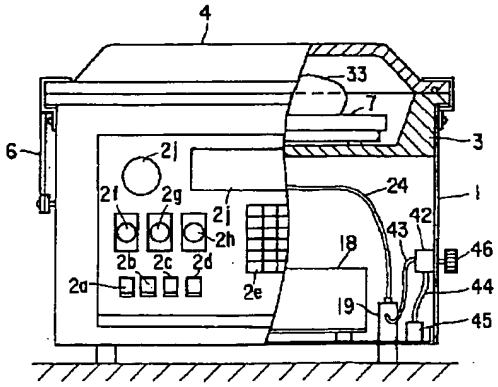
【図３】


14
12
10
11
7a
33
34
7
4
15
3
9
16
8
32
20
25
2j
17
21
24
1
23
22
27
2e
26
28
18
29
2
30
31

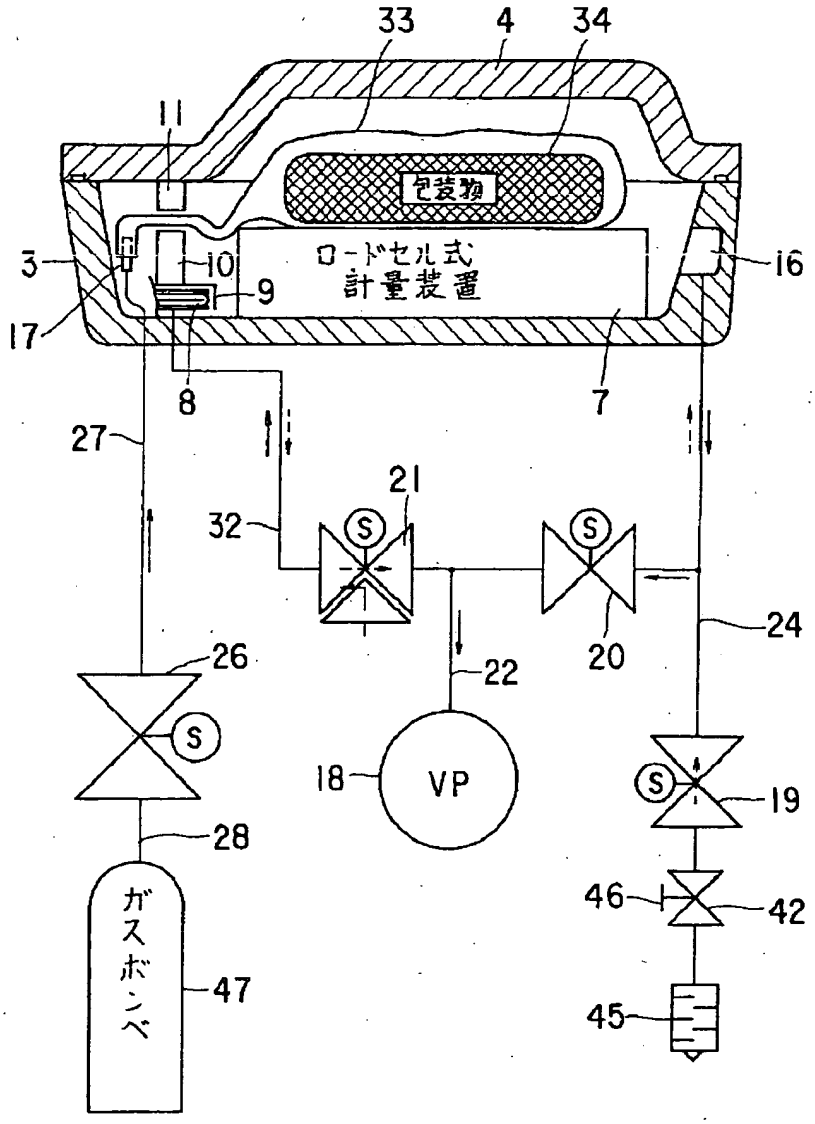
【図４】


14
12
11
10
33
34
4
15
3
9
7
16
17
8
32
20
25
21
23
24
39
38
37
2k
36
22
2
40
35
18
41

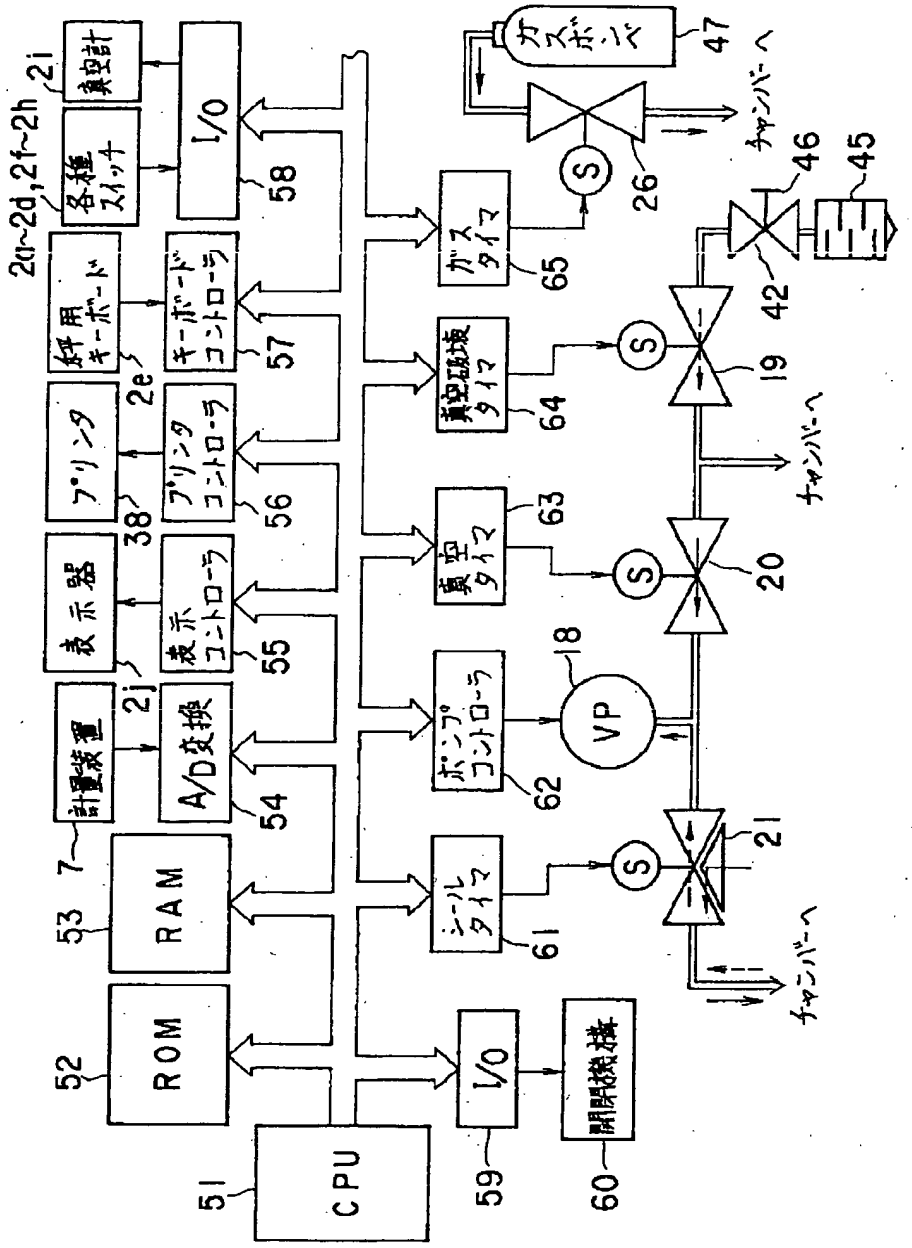
【図５】


4
33
7
6
3
2j
24
1
2f
2g
2j
42
43
2h
18
46
2b
2c
2d
2a
2e
44
19
45

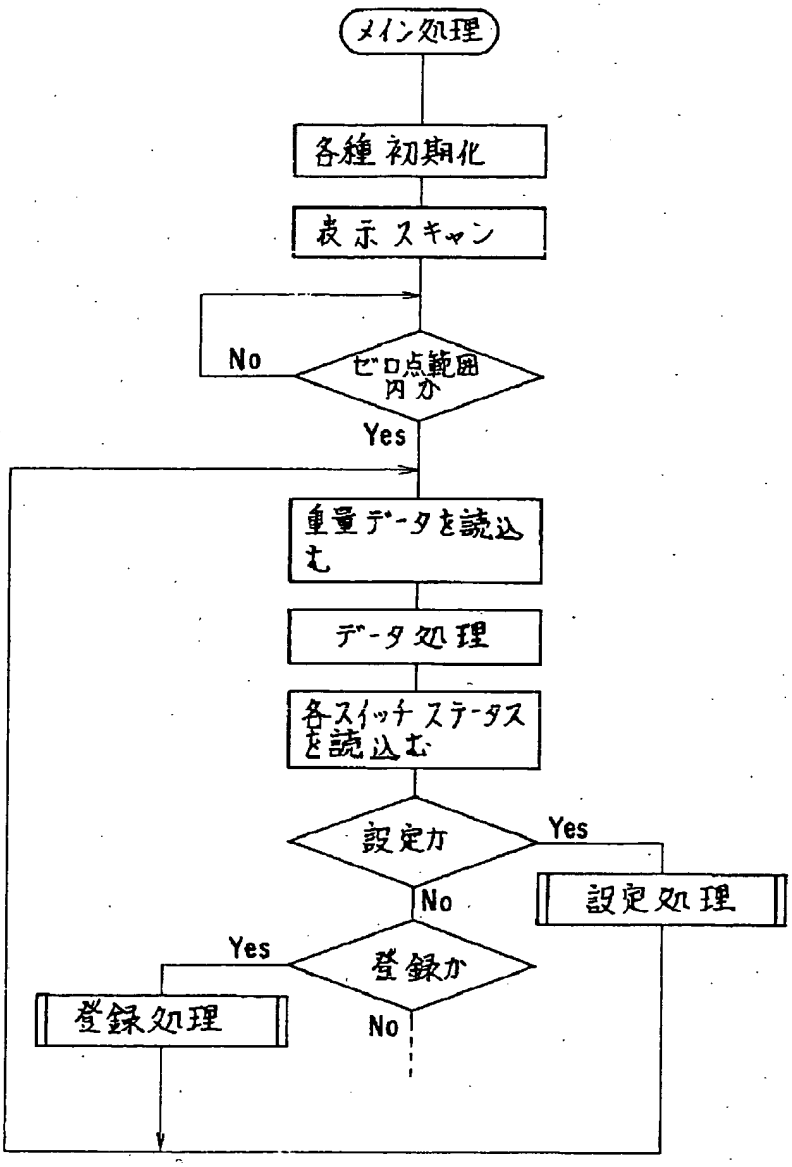
【図6】


33
4
34
11
包装物
3
10
9
ロードセル式
計量装置
16
17
8
7
27
21
32
S
S
24
26
22
20
S
18
VP
S
19
28
46
42
ガスボンベ
47
45

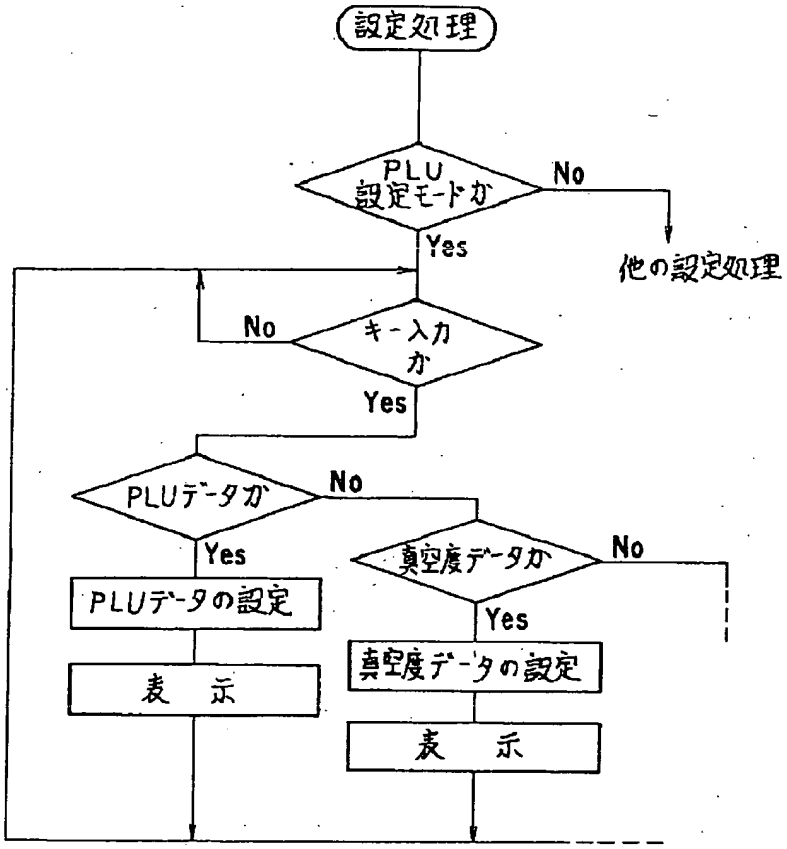
【図7】


CPU
51
ROM
52
RAM
53
I/O
59
開閉機構
60
I/O
58
計量装置
7
A/D変換
54
表示器
2j
表示コントローラ
55
プリンタ
38
プリンタコントローラ
56
テンキー用キーボード
2e
キーボードコントローラ
57
各種スイッチ
2d,2f~2h
真空計
2i
ポンプコントローラ
62
VP
18
シールタイマ
61
真空破壊タイマ
64
真空タイマ
63
ガスタイマ
65
ガスボンベ
47
チャンバーへ
チャンバーへ
チャンバーへ
46
45
42
26
19
20
21
S

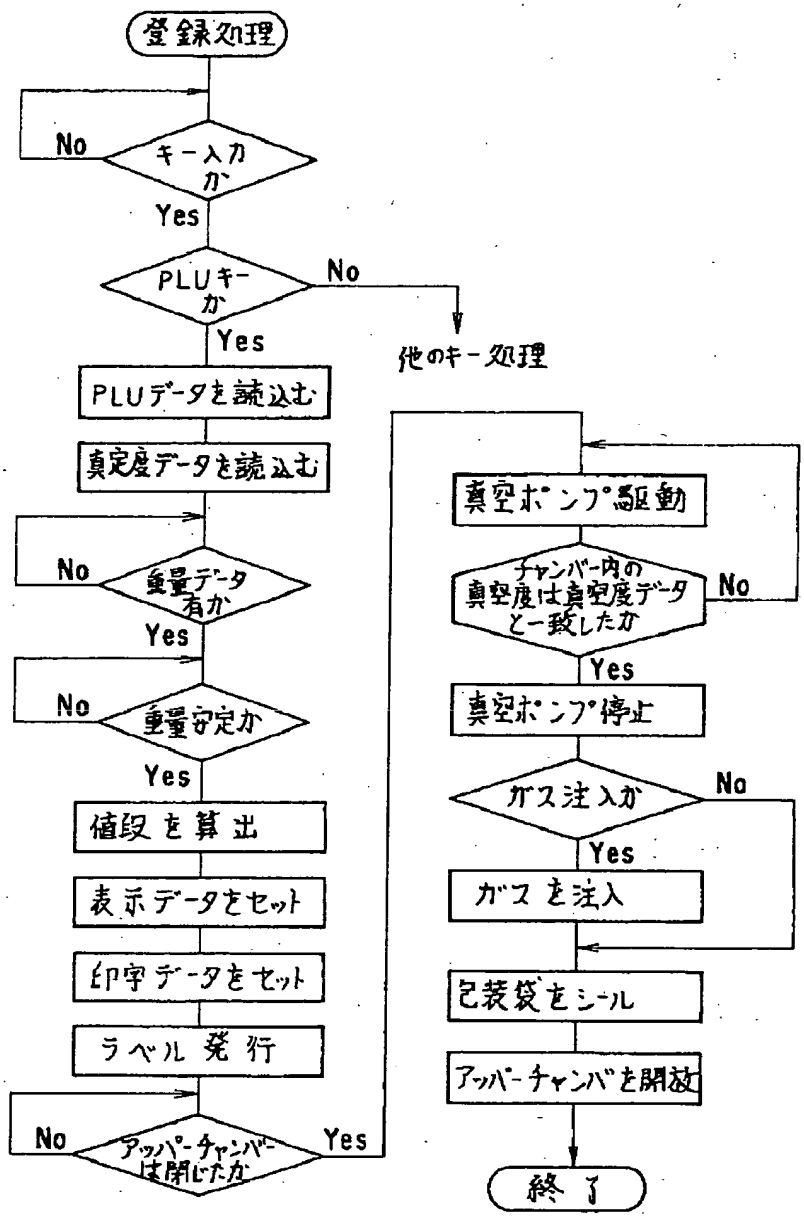
【図8】


メイン処理
各種初期化
表示スキャン
No
ゼロ点範囲内か
Yes
重量データを読込む
データ処理
各スイッチステータスを読込む
設定か
Yes
設定処理
No
Yes
登録か
登録処理
No

【図9】


設定処理
PLU
設定モードか
No
Yes
他の設定処理
No
キー入力
か
Yes
PLUデータか
No
Yes
真空度データか
No
Yes
PLUデータの設定
表　示
真空度データの設定
表　示

【図10】


登録処理
No
キー入力か
Yes
PLUキーか
No
他のキー処理
Yes
PLUデータを読込む
真空度データを読込む
No
重量データ有か
Yes
No
重量安定か
Yes
値段を算出
表示データをセット
印字データをセット
ラベル発行
No
アッパーチャンバーは閉じたか
Yes
真空ポンプ駆動
チャンバー内の真空度は真空度データと一致したか
No
Yes
真空ポンプ停止
ガス注入か
No
Yes
ガスを注入
包装袋をシール
アッパーチャンバを開放
終了

05-178324

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CLAIMS

[Claim(s)]
[Claim 1] Vacuum-packaging equipment characterized by containing in the chamber which can open and close freely the packaging goods contained by the bag, building in a weight detector style in said chamber in the vacuum-packaging equipment which makes the inside of the chamber a vacua and vacuum-packs it, and measuring said packaging goods at the weight detector guard.
[Claim 2] The chamber which can be opened and closed freely, and the weight detector style built in in this chamber, The breaker style of said chamber, and the vacuum device which makes the inside of said chamber a vacuum, If measuring of the packaging goods contained by the bag by said weight detector style in the open condition of said chamber is performed and the completion signal of measuring is outputted A means to drive said breaker style and to make said chamber blockade, and a means to drive said vacuum device if lock out of said chamber by said breaker style is completed, Vacuum-packaging equipment characterized by establishing the means which will carry out the seal of said bag if the vacuum actuation by said vacuum device is completed, and a means to drive said breaker style and to make said chamber open wide when the seal actuation by this means is completed.
[Claim 3] In the vacuum-packaging equipment which contains in the chamber which can open and close freely the packaging goods contained by the bag, makes the inside of the chamber a vacua and vacuum-packs it While the memory which set up degree of vacuum data for every item of packaging goods is prepared while building in a weight detector style in said chamber, and measuring said packaging goods at the weight detector guard Vacuum-packaging equipment characterized by making the inside of said chamber into a vacua for the degree of vacuum data corresponding to the measured packaging goods based on read-out and its degree of vacuum data from said memory.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the vacuum-packaging equipment which contained the weight detector style.
[0002]
[Description of the Prior Art] Conventionally, vacuum-packaging equipment drove the vacuum device, where a chamber is closed, it made the inside of a chamber the vacua, and was vacuum-packing by containing the packaging goods contained by the bag in the chamber, and carrying out the seal of the bag after that.
[0003]
[Problem(s) to be Solved by the Invention] For this reason, the vacuum packing of the packaging goods had to be carried out, and both vacuum-packaging equipment and a metering installation had to be prepared for measuring, and while the installation tooth space of equipment became large, there was a problem from which an activity becomes troublesome.
[0004] Then, while carrying out the vacuum packing of the packaging goods, when measuring, this invention tends to offer the vacuum-packaging equipment which can improve workability while being able to make the installation tooth space of equipment small. Moreover, this invention tends to offer the vacuum-packaging equipment which can improve workability further. Moreover, this invention tends to offer the vacuum-packaging equipment which can perform a high vacuum packaging of the precision according to the degree of vacuum set up for every item.
[0005]
[Means for Solving the Problem] Invention of claim 1 correspondence is contained in the chamber which can open and close freely the packaging goods contained by the bag, builds in a weight detector style in a chamber in the vacuum-packaging equipment which makes the inside of the chamber a vacua and vacuum-packs it, and measures packaging goods at the weight detector guard.
[0006] The chamber which can open and close invention of claim 2 correspondence freely, and the weight detector style built in in this chamber, If measuring of the packaging goods contained by the bag by the weight detector style in the breaker style of a chamber, the vacuum device which makes the inside of a chamber a vacuum, and the open condition of a chamber is performed and the completion signal of measuring is outputted A means to drive a breaker style and to make a chamber blockade, and a means to drive a vacuum device if lock out of the chamber by the breaker style is completed, The means which will carry out the seal of the bag if the vacuum actuation by the vacuum device is completed, and a means to drive a breaker style and to make a chamber open wide when the seal actuation by this means is completed are established.
[0007] In the vacuum-packaging equipment which contains invention of claim 3 correspondence in the chamber which can open and close freely the packaging goods contained by the bag, makes the inside of the chamber a vacua and vacuum-packs it While the memory which set up degree of vacuum data for every item of packaging goods is prepared while building in a weight detector style in a chamber, and measuring packaging goods at the weight detector guard Based on read-out and its degree of vacuum data, the inside of a chamber is made into a vacua for the degree of vacuum data corresponding to the measured packaging goods from memory.
[0008]
[Function] In this invention of such a configuration, measuring and a vacuum packaging of packaging goods can be performed with one equipment.
[0009] That is, the packaging goods contained by the bag by the weight detector style in the open condition of a

chamber are measured. And if a breaker style drives, a chamber is blockaded, when measuring is completed and the completion signal of measuring is outputted, and lock out of a chamber is completed, a vacuum device will drive and the inside of a chamber will be made into a vacuum. And if vacuum actuation is completed, the seal of the bag will be carried out, if this seal actuation is completed, a breaker style will drive and a chamber will be opened wide. Moreover, it is determined based on the degree of vacuum data corresponding to the packaging goods which the degree of the vacuum in a chamber measures.

[0010]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

[0011] Drawing 1 is the perspective view showing an appearance, the control-panel unit 2 is attached in the front face of a case 1, and the chamber which consists of an upper chamber 4 which can be opened and closed freely to the lower chamber 3 and this lower chamber 3 is attached on the case 1.

[0012] Electric power switch 2a, switch 2b for hold, switch 2for jump c, and switch 2d for gas and keyboard 2for balances e and vacuum timer 2f, seal timer 2g, gas timer 2h, vacuum-gauge 2i, indicator 2j, and label issue opening 2k are prepared in said control-panel unit 2.

[0013] The door 5 is formed in one side face of said case 1. Between the other side faces of said case 1, and said upper chamber 4, the arm 6 which constitutes a part of breaker style of an upper chamber 4 is attached.

[0014] And as shown in drawing 2 , in said lower chamber 3, the load cell type metering installation 7 as a weight detector style and the Ayr back 8 are built in. After said Ayr back 8, the heat sealing 10 which consisted of heaters through the protection member 9 is attached. The supporter material 11 is attached inside said heat sealing 10 and the upper chamber 4 which counters. Moreover, in said lower chamber 3, the pilot switch 12 which detects the state of obstruction of said upper chamber 4 is formed.

[0015] Inside the point of said upper chamber 4, and the back end section, O rings 13a and 13b for holding a secret family name are formed, and the handle 14 is formed in the outside of a point. The exhaust port 16 is established in the back end in said lower chamber 3 through the filter 15. The gas communication trunk 17 is formed in the pars-basilaris-ossis-occipitalis tip side of said lower chamber 3.

[0016] In said case 1, the vacuum pump 18 and vacuum breaker 19 which constitute a vacuum device at the pars basilaris ossis occipitalis are contained, and the solenoid valve 20 for vacuums and the solenoid valve 21 for heat sealing are attached in the bottom outside side of said lower chamber 3. Said vacuum pump 18, the solenoid valve 20 for vacuums, and the solenoid valve 21 for heat sealing are opened for free passage through a branch pipe 23 the middle with a hose 22, and said vacuum breaker 19 and exhaust port 16, and the solenoid valve 20 for vacuums are opened for free passage through the branch pipe 25 the middle with the hose 24. Said solenoid valve 21 for heat sealing is open for free passage in said Ayr back 8 through a hose 32.

[0017] Moreover, as shown in said case 1 at drawing 3 , the solenoid valve 26 for gas is contained, and it is open for free passage [solenoid valve] in the gas introduction tubing 29 projected outside through the hose 28 while the solenoid valve 26 for gas is open for free passage to said gas communication trunk 17 through a hose 27. Moreover, in said case 1, it is fixed to the substrate fixing metal 31, and the circuit board 30 which has arranged passive circuit elements is contained. The passive circuit elements of said circuit board 30 are connected by each part article etc. and lead wire of the load cell of said load cell type metering installation 7, said vacuum pump 18, and said control-panel unit 2.

[0018] On base 7a of said load cell type metering installation 7, the packaging goods 34 contained by the plastics bag 33 are laid. And it is arranged through between said heat sealing 10 and supporter material 11, and said gas communication trunk 17 is inserted in the tip opening by the opening side of said plastics bag 33.

[0019] Moreover, in said case 1, as shown in drawing 4 , the Label Printer unit 35 is contained. Said Label Printer unit 35 prints data by the printer 38 to the label paper 37 with pasteboard sent out from the label roll 36, and it rolls round pasteboard 40 with the winding roll 41 while it publishes a label 39 from said label issue opening 2k.

[0020] Furthermore, as shown in said case 1 paries medialis orbitae at drawing 5 , the vacuum open valve 42 is fixed, and it is open for free passage [open valve] also to the silencer 45 through a hose 44 while this vacuum open valve 42 is open for free passage to said vacuum breaker 19 through a hose 43. Said vacuum open valve 42 can adjust [the tongue 46 attached in the exterior of a case 1] the open degree of a valve now.

[0021] When said chambers 3 and 4, a vacuum pump 18, and the free passage relation of each valves 19, 20, 21, 26, and 42 are shown typically, it comes to be shown in drawing 6 . The solenoid valve 26 for gas will be opened for free

passage with a chemical cylinder 47 outside. In addition, the arrow head of a drawing solid line shows the air at the time of disconnection of the solenoid valve 20 for vacuums, the solenoid valve 21 for heat sealing, and the solenoid valve 26 for gas, and the flow of gas, and the arrow head of a drawing middle point line shows the flow of the air at the time of disconnection of a vacuum breaker 19.

[0022] CPU from which drawing 7 is the block diagram showing circuitry, and 51 constitutes a control-section body (central processing unit), ROM in which the program data with which, as for 52, this CPU51 controls each part were stored (read only memory), The PLU file to which the PLU data and degree of vacuum data with which 53 consists of existence of a unit price, a name of article, a section code, and insufflation etc. were set for every item, RAM to which the print buffer, the display buffer, etc. were set (random access memory), The A/D converter which 54 carries out digital conversion of the weight signal [analog / from said load cell type metering installation 7], and is incorporated, The display controller which 55 outputs an indicative data to said indicator 2j, and performs a display control, The printer controller to which 56 controls said printer 38 and data printing to a label 39 is made to perform, and 57 are keyboard controllers which perform the keying signal incorporation from said keyboard 2for balances e.

[0023] Moreover, 58 is connected with said vacuum gage 2i at said various switches 2a-2d and 2f - 2h list. said various switches 2a-2d and 2f- the I/O Port which carries out output processing of the driving signal of said vacuum gage 2i while carrying out input process of the switch signal from 2h and 12 -- The I/O Port connected with the breaker style 60 which 59 drives said arm 6 and carries out the switching action of said upper chamber 4, The seal timer with which 61 controls said seal solenoid valve 21, the pump controller by which 62 controls said vacuum pump 18, The vacuum timer with which 63 controls said solenoid valve 20 for vacuums, the vacuum-break timer with which 64 controls said vacuum breaker 19, and 65 are gas timers which control said solenoid valve 26 for gas.

[0024] Said CPU51, and ROM52, RAM53, A/D converter 54, each controllers 55, 56, 57, and 62, each I/O Ports 58 and 59 and each timers 61, 63, 64, and 65 are electrically connected by the bus line 66.

[0025] Said CPU51 performs control shown in drawing 8 based on the program data in ROM52. Various initialization of RAM53 grade is performed first, the display scan of said indicator 2j is performed continuously, and a display check is performed. Then, the data incorporated from the metering installation 7 confirm whether go into the zero point range. And if it goes into the zero point range, auto-zero processing will be performed.

[0026] After the above pretreatment is completed, the measuring actuation by the metering installation 7 is attained. In this condition, weight data are incorporated from A/D converter 54, and data processing is performed. Moreover, each switches 2a-2d and the status (2f-2h) are read. Then, the mode checks setting mode, register mode, and the other mode, if it is in setting mode, setting processing will be performed, and registration processing will be performed if it is register mode.

[0027] As setting processing is shown in drawing 9 , it confirms whether to be PLU setting mode, and if it is not in PLU setting mode, other setting processings will be performed. Moreover, if it is in PLU setting mode, it will confirm whether there is any key input from keyboard 2for balances e continuously, and PLU data will be set up if a key input is a key input of PLU data. That is, the existence of the name of article for every item, a unit price, a section code, and insufflation etc. is set up to the PLU file of RAM53. And the set-up data are displayed on drop 2j each time. Moreover, if a key input is a key input of degree of vacuum data, degree of vacuum data will be set up. That is, the degree of vacuum data for every item are set up to the PLU file of RAM53. And the set-up data are displayed on drop 2j each time.

[0028] Registration processing confirms whether there is any key input from keyboard 2for balances e first, as shown in drawing 10 , and if a key input is the assignment key of PLU, it will read the PLU data and degree of vacuum data which were specified from the PLU file. Then, it confirms whether incorporation of weight data was performed, and if weight data are incorporated, after waiting to stabilize weight data, a price is computed with a weight x unit price. And while setting indicative datas, such as weight, a unit price, a price, a name of article, and a section code, to a display buffer, it sets to a print buffer. And while driving the printer unit 35, printing data on a label 39 by the printer 38 and performing label issue, the completion signal of measuring occurs.

[0029] When the completion signal of measuring occurs, the breaker style 60 is driven through I/O Port 59, and said upper chamber 4 is made to blockade. And with the switch signal of said pilot switch 12, it is confirmed whether the upper chamber 4 closed. While controlling said pump controller 62 continuously and making a vacuum pump 18 drive, the solenoid valve 20 for vacuums is made to open wide with the vacuum timer 63, if an upper chamber 4 closes.

[0030] And if the degree of vacuum data read from the degree of vacuum and PLU file in a chamber are compared and the degree of vacuum in a chamber is in agreement with degree of vacuum data, halt control of the vacuum pump 18 will be carried out. Then, the existence of insufflation is checked, if it is with insufflation, fixed time amount disconnection of the solenoid valve 26 for gas will be carried out with the gas timer 65, and the inert gas of a chemical cylinder 47 will be supplied in a plastics bag 33 through the gas communication trunk 17. Then, one of the two of the seal solenoid valve 21 is wide opened with the seal timer 61, and external air is supplied to the Ayr back 8. The Ayr back 8 swells by this, heat sealing 10 goes up, by heat sealing 10 and the supporter material 11, on both sides of a plastics bag 33, heating joining of the plastics bag 33 is carried out, and it carries out a seal. And if the seal timer 61 passes the deadline of, the seal solenoid valve 21 will close, the solenoid valve 20 for vacuums will also be closed to coincidence, a vacuum breaker 19 opens wide further, and air is supplied in a chamber. The sound of suction of the air at this time is controlled by the silencer 45.
[0031] And finally the breaker style 60 operates through I/O Port 59, and an upper chamber 4 is opened wide. In addition, the vacuum open valve 42 is for adjusting the earliness of the switching action of said upper chamber 4, i.e., the earliness which returns the vacuum in a chamber to atmospheric pressure, and the adjustment is pinched and is performed by 46.
[0032] In addition, if said switch 2b for a hold is operated when vacuum control of the inside of a chamber is carried out by the vacuum pump 18, the inside of a chamber will be held with the degree of vacuum at that time, and if switch 2b for a hold is again operated in this condition, the vacuum control by the vacuum pump 18 will be continued succeedingly.
[0033] Moreover, to an insufflation process, if said switch 2c for a jump is operated when vacuum control of the inside of a chamber is carried out by the vacuum pump 18, when a vacuum process is completed immediately and there is the following process, i.e., insufflation, when there is no insufflation again, it will jump to a seal process.
[0034] In the example of such a configuration, it is in the condition which the upper chamber 4 is opening, and first, packaging goods 34 are contained in a plastics bag 33, and it puts on a metering installation 7. And keyboard 2e for balances is operated and PLU assignment corresponding to packaging goods 34 is performed. Thereby, the name of article corresponding to packaging goods 34, a unit price, a section code, the existence of insufflation, and degree of vacuum data are read from a PLU file. And a price is computed by the weight x unit price. In this way, weight, a name of article, a unit price, and a section code are displayed on drop 2j. Moreover, weight, a name of article, a unit price, and a section code are printed by the label 39 by the printer 38, and label issue is performed.
[0035] After the above label issue actuation is completed, the completion signal of measuring occurs, the breaker style 60 operates by this, and an upper chamber 4 is made to blockade. And if lock out of an upper chamber 4 is checked by the pilot switch 12, while a vacuum pump 18 operates by the pump controller 62, the solenoid valve 20 for vacuums will be wide opened by the vacuum timer 63. In this way, the air in a chamber is extracted and a degree of vacuum is raised. And if in agreement with the degree of vacuum data with which the degree of vacuum in a chamber was read, actuation of a vacuum pump 18 will be suspended.
[0036] Then, the existence of insufflation is checked, if pouring in gas is set up, fixed time amount disconnection of the solenoid valve 26 for gas will be carried out by the gas timer 65, and inert gas will be supplied in a plastics bag 33 from a chemical cylinder 47.
[0037] One of the two of the seal solenoid valve 21 is wide opened by the seal timer 61 after that, external air is supplied to the Ayr back 8, and the seal of the plastics bag 33 is carried out with heat sealing 10. And if the seal timer 61 passes the deadline of, the seal solenoid valve 21 will be closed, and the solenoid valve 20 for vacuums is also closed, a vacuum breaker 19 is opened further wide, and air is supplied in a chamber. And finally an upper chamber 4 is wide opened by the breaker style 60. If the label 39 published to drawing and the exterior in the packaging goods by which carried out the deer and the vacuum packing was carried out out of the chamber is stuck, a vacuum packaging of one goods will be completed.
[0038] Thus, while being able to make small the installation tooth space of the equipment which can summarize the whole in a compact and needs it in one equipment by incorporating a metering installation 7 in a chamber at one, ease of compaction of working hours or an activity can be planned and workability can be improved.
[0039] Moreover, since an upper chamber 4 opens automatically after an upper chamber 4 blockades automatically, vacuum-packaging actuation is started and a vacuum packaging is completed, while label issue is performed, after measuring by the metering installation 7 is completed, actuation becomes very easy and can improve workability

further. Moreover, since degree of vacuum data are beforehand set as a PLU file for every item and a vacuum packaging is possible in the degree of vacuum based on the degree of vacuum data, a high vacuum packaging of precision can be performed.

[0040] If the switch 2c for a jump operates when the inside of a chamber can be held with the degree of vacuum at that time and vacuum control of the inside of a chamber is carried out by the vacuum pump 18, if switch 2b for a hold is operated when vacuum control of the inside of a chamber is furthermore carried out by the vacuum pump 18, since a vacuum process is completed immediately and can jump to the following process, control other than the control set up can also perform easily, and the degree of freedom of control can improve.

[0041]

[Effect of the Invention] When measuring according to this invention while carrying out the vacuum packing of the packaging goods as explained in full detail above, while being able to make the installation tooth space of equipment small, the vacuum-packaging equipment which can improve workability can be offered. Moreover, according to this invention, the vacuum-packaging equipment which can improve workability further can be offered. Moreover, according to this invention, the vacuum-packaging equipment which can perform a high vacuum packaging of the precision according to the degree of vacuum set up for every item can be offered.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] This invention relates to the vacuum-packaging equipment which contained the weight detector style.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] Conventionally, vacuum-packaging equipment drove the vacuum device, where a chamber is closed, it made the inside of a chamber the vacua, and was vacuum-packing by containing the packaging goods contained by the bag in the chamber, and carrying out the seal of the bag after that.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] When measuring according to this invention while carrying out the vacuum packing of the packaging goods as explained in full detail above, while being able to make the installation tooth space of equipment small, the vacuum-packaging equipment which can improve workability can be offered. Moreover, according to this invention, the vacuum-packaging equipment which can improve workability further can be offered. Moreover, according to this invention, the vacuum-packaging equipment which can perform a high vacuum packaging of the precision according to the degree of vacuum set up for every item can be offered.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] For this reason, the vacuum packing of the packaging goods had to be carried out, and both vacuum-packaging equipment and a metering installation had to be prepared for measuring, and while the installation tooth space of equipment became large, there was a problem from which an activity becomes troublesome.

[0004] Then, while carrying out the vacuum packing of the packaging goods, when measuring, this invention tends to offer the vacuum-packaging equipment which can improve workability while being able to make the installation tooth space of equipment small. Moreover, this invention tends to offer the vacuum-packaging equipment which can improve workability further. Moreover, this invention tends to offer the vacuum-packaging equipment which can perform a high vacuum packaging of the precision according to the degree of vacuum set up for every item.

[0005]

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MEANS

[Means for Solving the Problem] Invention of claim 1 correspondence is contained in the chamber which can open and close freely the packaging goods contained by the bag, builds in a weight detector style in a chamber in the vacuum-packaging equipment which makes the inside of the chamber a vacua and vacuum-packs it, and measures packaging goods at the weight detector guard.

[0006] The chamber which can open and close invention of claim 2 correspondence freely, and the weight detector style built in in this chamber, If measuring of the packaging goods contained by the bag by the weight detector style in the breaker style of a chamber, the vacuum device which makes the inside of a chamber a vacuum, and the open condition of a chamber is performed and the completion signal of measuring is outputted A means to drive a breaker style and to make a chamber blockade, and a means to drive a vacuum device if lock out of the chamber by the breaker style is completed, The means which will carry out the seal of the bag if the vacuum actuation by the vacuum device is completed, and a means to drive a breaker style and to make a chamber open wide when the seal actuation by this means is completed are established.

[0007] In the vacuum-packaging equipment which contains invention of claim 3 correspondence in the chamber which can open and close freely the packaging goods contained by the bag, makes the inside of the chamber a vacua and vacuum-packs it While the memory which set up degree of vacuum data for every item of packaging goods is prepared while building in a weight detector style in a chamber, and measuring packaging goods at the weight detector guard Based on read-out and its degree of vacuum data, the inside of a chamber is made into a vacua for the degree of vacuum data corresponding to the measured packaging goods from memory.

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OPERATION

[Function] In this invention of such a configuration, measuring and a vacuum packaging of packaging goods can be performed with one equipment.
[0009] That is, the packaging goods contained by the bag by the weight detector style in the open condition of a chamber are measured. And if a breaker style drives, a chamber is blockaded, when measuring is completed and the completion signal of measuring is outputted, and lock out of a chamber is completed, a vacuum device will drive and the inside of a chamber will be made into a vacuum. And if vacuum actuation is completed, the seal of the bag will be carried out, if this seal actuation is completed, a breaker style will drive and a chamber will be opened wide. Moreover, it is determined based on the degree of vacuum data corresponding to the packaging goods which the degree of the vacuum in a chamber measures.

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EXAMPLE

[Example] Hereafter, the example of this invention is explained with reference to a drawing.
[0011] Drawing 1 is the perspective view showing an appearance, the control-panel unit 2 is attached in the front face of a case 1, and the chamber which consists of an upper chamber 4 which can be opened and closed freely to the lower chamber 3 and this lower chamber 3 is attached on the case 1.
[0012] Electric power switch 2a, switch 2b for hold, switch 2for jump c, and switch 2d for gas and keyboard 2for balances e and vacuum timer 2f, seal timer 2g, gas timer 2h, vacuum-gauge 2i, indicator 2j, and label issue opening 2k are prepared in said control-panel unit 2.
[0013] The door 5 is formed in one side face of said case 1. Between the other side faces of said case 1, and said upper chamber 4, the arm 6 which constitutes a part of breaker style of an upper chamber 4 is attached.
[0014] And as shown in drawing 2 , in said lower chamber 3, the load cell type metering installation 7 as a weight detector style and the Ayr back 8 are built in. After said Ayr back 8, the heat sealing 10 which consisted of heaters through the protection member 9 is attached. The supporter material 11 is attached inside said heat sealing 10 and the upper chamber 4 which counters. Moreover, in said lower chamber 3, the pilot switch 12 which detects the state of obstruction of said upper chamber 4 is formed.
[0015] Inside the point of said upper chamber 4, and the back end section, O rings 13a and 13b for holding a secret family name are formed, and the handle 14 is formed in the outside of a point. The exhaust port 16 is established in the back end in said lower chamber 3 through the filter 15. The gas communication trunk 17 is formed in the pars-basilaris-ossis-occipitalis tip side of said lower chamber 3.
[0016] In said case 1, the vacuum pump 18 and vacuum breaker 19 which constitute a vacuum device at the pars basilaris ossis occipitalis are contained, and the solenoid valve 20 for vacuums and the solenoid valve 21 for heat sealing are attached in the bottom outside side of said lower chamber 3. Said vacuum pump 18, the solenoid valve 20 for vacuums, and the solenoid valve 21 for heat sealing are opened for free passage through a branch pipe 23 the middle with a hose 22, and said vacuum breaker 19 and exhaust port 16, and the solenoid valve 20 for vacuums are opened for free passage through the branch pipe 25 the middle with the hose 24. Said solenoid valve 21 for heat sealing is open for free passage in said Ayr back 8 through a hose 32.
[0017] Moreover, as shown in said case 1 at drawing 3 , the solenoid valve 26 for gas is contained, and it is open for free passage [solenoid valve] in the gas introduction tubing 29 projected outside through the hose 28 while the solenoid valve 26 for gas is open for free passage to said gas communication trunk 17 through a hose 27. Moreover, in said case 1, it is fixed to the substrate fixing metal 31, and the circuit board 30 which has arranged passive circuit elements is contained. The passive circuit elements of said circuit board 30 are connected by each part article etc. and lead wire of the load cell of said load cell type metering installation 7, said vacuum pump 18, and said control-panel unit 2.
[0018] On base 7a of said load cell type metering installation 7, the packaging goods 34 contained by the plastics bag 33 are laid. And it is arranged through between said heat sealing 10 and supporter material 11, and said gas communication trunk 17 is inserted in the tip opening by the opening side of said plastics bag 33.
[0019] Moreover, in said case 1, as shown in drawing 4 , the Label Printer unit 35 is contained. Said Label Printer unit 35 prints data by the printer 38 to the label paper 37 with pasteboard sent out from the label roll 36, and it rolls round pasteboard 40 with the winding roll 41 while it publishes a label 39 from said label issue opening 2k.
[0020] Furthermore, as shown in said case 1 paries medialis orbitae at drawing 5 , the vacuum open valve 42 is fixed, and it is open for free passage [open valve] also to the silencer 45 through a hose 44 while this vacuum open valve 42 is open for free passage to said vacuum breaker 19 through a hose 43. Said vacuum open valve 42 can adjust [the

tongue 46 attached in the exterior of a case 1] the open degree of a valve now.
[0021] When said chambers 3 and 4, a vacuum pump 18, and the free passage relation of each valves 19, 20, 21, 26, and 42 are shown typically, it comes to be shown in drawing 6 . The solenoid valve 26 for gas will be opened for free passage with a chemical cylinder 47 outside. In addition, the arrow head of a drawing solid line shows the air at the time of disconnection of the solenoid valve 20 for vacuums, the solenoid valve 21 for heat sealing, and the solenoid valve 26 for gas, and the flow of gas, and the arrow head of a drawing middle point line shows the flow of the air at the time of disconnection of a vacuum breaker 19.
[0022] CPU from which drawing 7 is the block diagram showing circuitry, and 51 constitutes a control-section body (central processing unit), ROM in which the program data with which, as for 52, this CPU51 controls each part were stored (read only memory), The PLU file to which the PLU data and degree of vacuum data with which 53 consists of existence of a unit price, a name of article, a section code, and insufflation etc. were set for every item, RAM to which the print buffer, the display buffer, etc. were set (random access memory), The A/D converter which 54 carries out digital conversion of the weight signal [analog / from said load cell type metering installation 7], and is incorporated, The display controller which 55 outputs an indicative data to said indicator 2j, and performs a display control, The printer controller to which 56 controls said printer 38 and data printing to a label 39 is made to perform, and 57 are keyboard controllers which perform the keying signal incorporation from said keyboard 2for balances e.
[0023] Moreover, 58 is connected with said vacuum gage 2i at said various switches 2a-2d and 2f - 2h list. said various switches 2a-2d and 2f- the I/O Port which carries out output processing of the driving signal of said vacuum gage 2i while carrying out input process of the switch signal from 2h and 12 -- The I/O Port connected with the breaker style 60 which 59 drives said arm 6 and carries out the switching action of said upper chamber 4, The seal timer with which 61 controls said seal solenoid valve 21, the pump controller by which 62 controls said vacuum pump 18, The vacuum timer with which 63 controls said solenoid valve 20 for vacuums, the vacuum-break timer with which 64 controls said vacuum breaker 19, and 65 are gas timers which control said solenoid valve 26 for gas.
[0024] Said CPU51, and ROM52, RAM53, A/D converter 54, each controllers 55, 56, 57, and 62, each I/O Ports 58 and 59 and each timers 61, 63, 64, and 65 are electrically connected by the bus line 66.
[0025] Said CPU51 performs control shown in drawing 8 based on the program data in ROM52. Various initialization of RAM53 grade is performed first, the display scan of said indicator 2j is performed continuously, and a display check is performed. Then, the data incorporated from the metering installation 7 confirm whether go into the zero point range. And if it goes into the zero point range, auto-zero processing will be performed.
[0026] After the above pretreatment is completed, the measuring actuation by the metering installation 7 is attained. In this condition, weight data are incorporated from A/D converter 54, and data processing is performed. Moreover, each switches 2a-2d and the status (2f-2h) are read. Then, the mode checks setting mode, register mode, and the other mode, if it is in setting mode, setting processing will be performed, and registration processing will be performed if it is register mode.
[0027] As setting processing is shown in drawing 9 , it confirms whether to be PLU setting mode, and if it is not in PLU setting mode, other setting processings will be performed. Moreover, if it is in PLU setting mode, it will confirm whether there is any key input from keyboard 2for balances e continuously, and PLU data will be set up if a key input is a key input of PLU data. That is, the existence of the name of article for every item, a unit price, a section code, and insufflation etc. is set up to the PLU file of RAM53. And the set-up data are displayed on drop 2j each time. Moreover, if a key input is a key input of degree of vacuum data, degree of vacuum data will be set up. That is, the degree of vacuum data for every item are set up to the PLU file of RAM53. And the set-up data are displayed on drop 2j each time.
[0028] Registration processing confirms whether there is any key input from keyboard 2for balances e first, as shown in drawing 10 , and if a key input is the assignment key of PLU, it will read the PLU data and degree of vacuum data which were specified from the PLU file. Then, it confirms whether incorporation of weight data was performed, and if weight data are incorporated, after waiting to stabilize weight data, a price is computed with a weight x unit price. And while setting indicative datas, such as weight, a unit price, a price, a name of article, and a section code, to a display buffer, it sets to a print buffer. And while driving the printer unit 35, printing data on a label 39 by the printer 38 and performing label issue, the completion signal of measuring occurs.
[0029] When the completion signal of measuring occurs, the breaker style 60 is driven through I/O Port 59, and said upper chamber 4 is made to blockade. And with the switch signal of said pilot switch 12, it is confirmed whether the

upper chamber 4 closed. While controlling said pump controller 62 continuously and making a vacuum pump 18 drive, the solenoid valve 20 for vacuums is made to open wide with the vacuum timer 63, if an upper chamber 4 closes.

[0030] And if the degree of vacuum data read from the degree of vacuum and PLU file in a chamber are compared and the degree of vacuum in a chamber is in agreement with degree of vacuum data, halt control of the vacuum pump 18 will be carried out. Then, the existence of insufflation is checked, if it is with insufflation, fixed time amount disconnection of the solenoid valve 26 for gas will be carried out with the gas timer 65, and the inert gas of a chemical cylinder 47 will be supplied in a plastics bag 33 through the gas communication trunk 17. Then, one of the two of the seal solenoid valve 21 is wide opened with the seal timer 61, and external air is supplied to the Ayr back 8. The Ayr back 8 swells by this, heat sealing 10 goes up, by heat sealing 10 and the supporter material 11, on both sides of a plastics bag 33, heating joining of the plastics bag 33 is carried out, and it carries out a seal. And if the seal timer 61 passes the deadline of, the seal solenoid valve 21 will close, the solenoid valve 20 for vacuums will also be closed to coincidence, a vacuum breaker 19 opens wide further, and air is supplied in a chamber. The sound of suction of the air at this time is controlled by the silencer 45.

[0031] And finally the breaker style 60 operates through I/O Port 59, and an upper chamber 4 is opened wide. In addition, the vacuum open valve 42 is for adjusting the earliness of the switching action of said upper chamber 4, i.e., the earliness which returns the vacuum in a chamber to atmospheric pressure, and the adjustment is pinched and is performed by 46.

[0032] In addition, if said switch 2b for a hold is operated when vacuum control of the inside of a chamber is carried out by the vacuum pump 18, the inside of a chamber will be held with the degree of vacuum at that time, and if switch 2b for a hold is again operated in this condition, the vacuum control by the vacuum pump 18 will be continued succeedingly.

[0033] Moreover, to an insufflation process, if said switch 2c for a jump is operated when vacuum control of the inside of a chamber is carried out by the vacuum pump 18, when a vacuum process is completed immediately and there is the following process, i.e., insufflation, when there is no insufflation again, it will jump to a seal process.

[0034] In the example of such a configuration, it is in the condition which the upper chamber 4 is opening, and first, packaging goods 34 are contained in a plastics bag 33, and it puts on a metering installation 7. And keyboard 2e for balances is operated and PLU assignment corresponding to packaging goods 34 is performed. Thereby, the name of article corresponding to packaging goods 34, a unit price, a section code, the existence of insufflation, and degree of vacuum data are read from a PLU file. And a price is computed by the weight x unit price. In this way, weight, a name of article, a unit price, and a section code are displayed on drop 2j. Moreover, weight, a name of article, a unit price, and a section code are printed by the label 39 by the printer 38, and label issue is performed.

[0035] After the above label issue actuation is completed, the completion signal of measuring occurs, the breaker style 60 operates by this, and an upper chamber 4 is made to blockade. And if lock out of an upper chamber 4 is checked by the pilot switch 12, while a vacuum pump 18 operates by the pump controller 62, the solenoid valve 20 for vacuums will be wide opened by the vacuum timer 63. In this way, the air in a chamber is extracted and a degree of vacuum is raised. And if in agreement with the degree of vacuum data with which the degree of vacuum in a chamber was read, actuation of a vacuum pump 18 will be suspended.

[0036] Then, the existence of insufflation is checked, if pouring in gas is set up, fixed time amount disconnection of the solenoid valve 26 for gas will be carried out by the gas timer 65, and inert gas will be supplied in a plastics bag 33 from a chemical cylinder 47.

[0037] One of the two of the seal solenoid valve 21 is wide opened by the seal timer 61 after that, external air is supplied to the Ayr back 8, and the seal of the plastics bag 33 is carried out with heat sealing 10. And if the seal timer 61 passes the deadline of, the seal solenoid valve 21 will be closed, and the solenoid valve 20 for vacuums is also closed, a vacuum breaker 19 is opened further wide, and air is supplied in a chamber. And finally an upper chamber 4 is wide opened by the breaker style 60. If the label 39 published to drawing and the exterior in the packaging goods by which carried out the deer and the vacuum packing was carried out out of the chamber is stuck, a vacuum packaging of one goods will be completed.

[0038] Thus, while being able to make small the installation tooth space of the equipment which can summarize the whole in a compact and needs it in one equipment by incorporating a metering installation 7 in a chamber at one, ease of compaction of working hours or an activity can be planned and workability can be improved.

[0039] Moreover, since an upper chamber 4 opens automatically after an upper chamber 4 blockades automatically, vacuum-packaging actuation is started and a vacuum packaging is completed, while label issue is performed, after measuring by the metering installation 7 is completed, actuation becomes very easy and can improve workability further. Moreover, since degree of vacuum data are beforehand set as a PLU file for every item and a vacuum packaging is possible in the degree of vacuum based on the degree of vacuum data, a high vacuum packaging of precision can be performed.

[0040] If the switch 2c for a jump operates when the inside of a chamber can be held with the degree of vacuum at that time and vacuum control of the inside of a chamber is carried out by the vacuum pump 18, if switch 2b for a hold is operated when vacuum control of the inside of a chamber is furthermore carried out by the vacuum pump 18, since a vacuum process is completed immediately and can jump to the following process, control other than the control set up can also perform easily, and the degree of freedom of control can improve.

[Translation done.]

NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The perspective view showing the appearance of the example of this invention.
[Drawing 2] The sectional view showing the internal configuration of this example.
[Drawing 3] The sectional view showing the internal configuration of this example.
[Drawing 4] The sectional view showing the internal configuration of this example.
[Drawing 5] The front view showing the configuration of this example which carried out the cross section the part.
[Drawing 6] Drawing showing typically the chamber of this example, a vacuum pump, and the free passage relation of each valve.
[Drawing 7] The block diagram showing the circuitry of this example.
[Drawing 8] The flow chart showing the Maine processing by CPU of this example.
[Drawing 9] The flow chart showing the setting processing in drawing 8 .
[Drawing 10] The flow chart showing the registration processing in drawing 8 .
[Description of Notations]
1 [-- The keyboard for balances 7 / -- A load cell type metering installation, 10 / -- Heat sealing, 12 / -- A pilot switch, 18 / -- A vacuum pump, 20 / -- The solenoid valve for vacuums, 21 / -- The solenoid valve for seals, 33 / -- A plastics bag, 34 / -- Packaging goods, 35 / -- A printer unit, 51 / -- CPU (central processing unit), 60 / -- Breaker style.] -- A case, 3 -- A lower chamber, 4 -- An upper chamber, 2e

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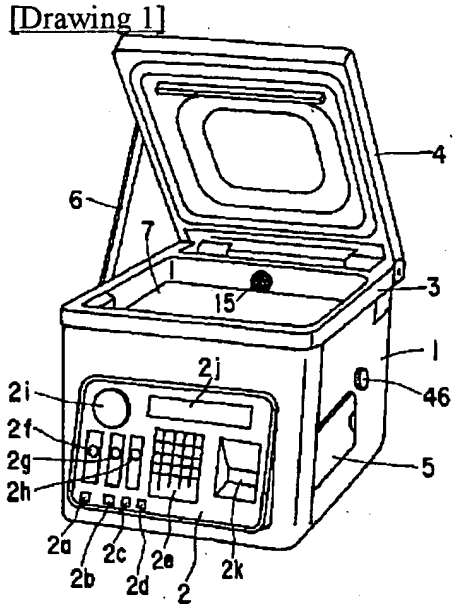
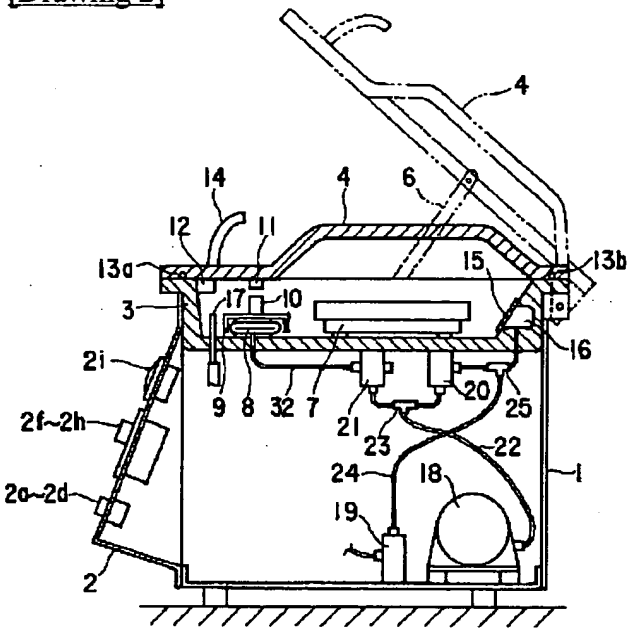
[Translation done.]

DRAWINGS

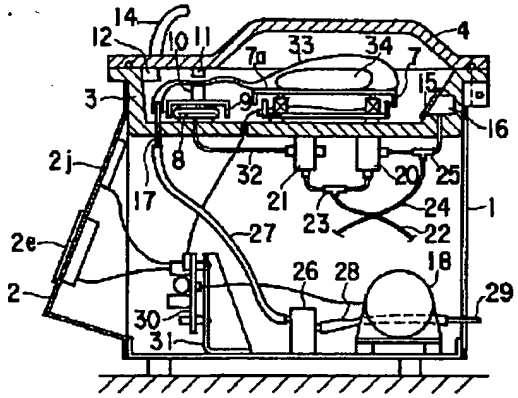
[Drawing 1]



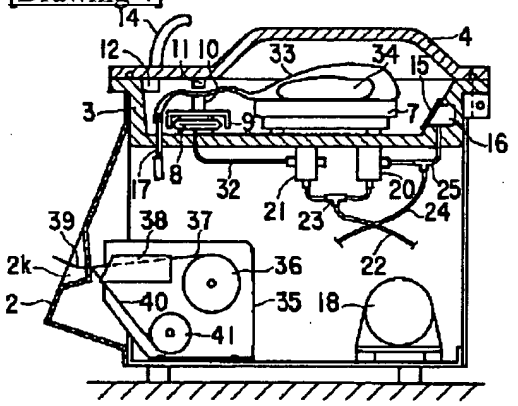
[Drawing 2]



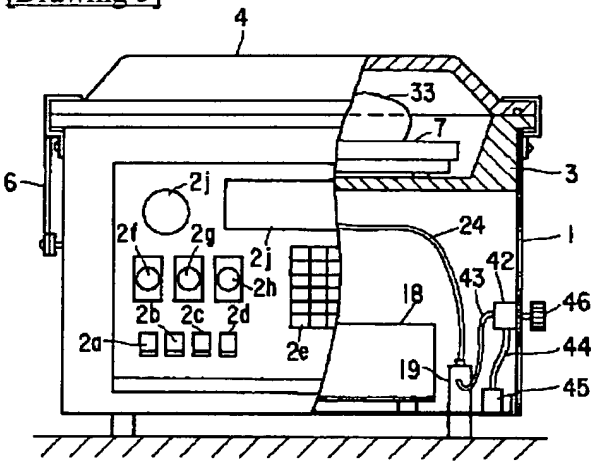
[Drawing 3]



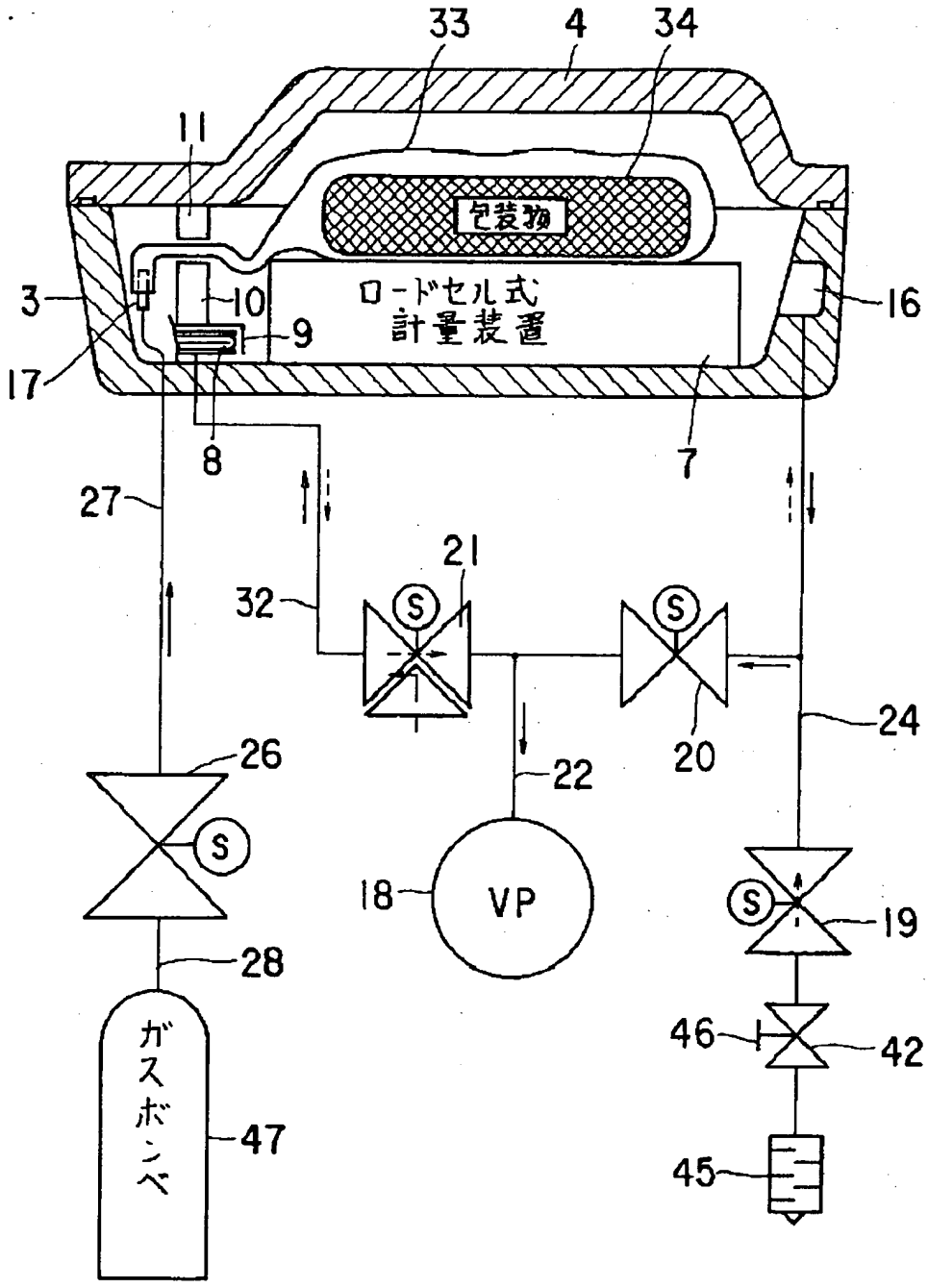
[Drawing 4]



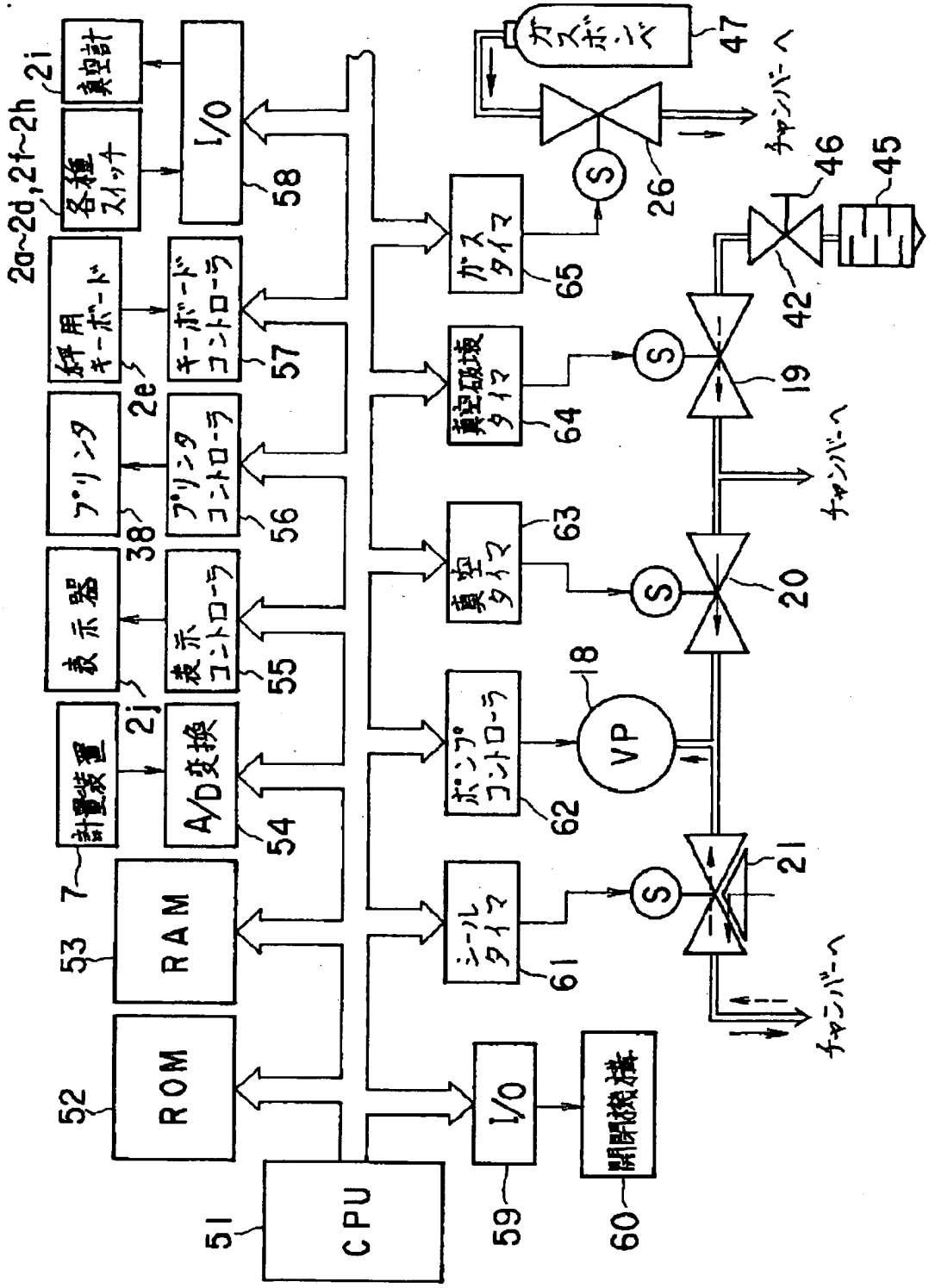
[Drawing 5]



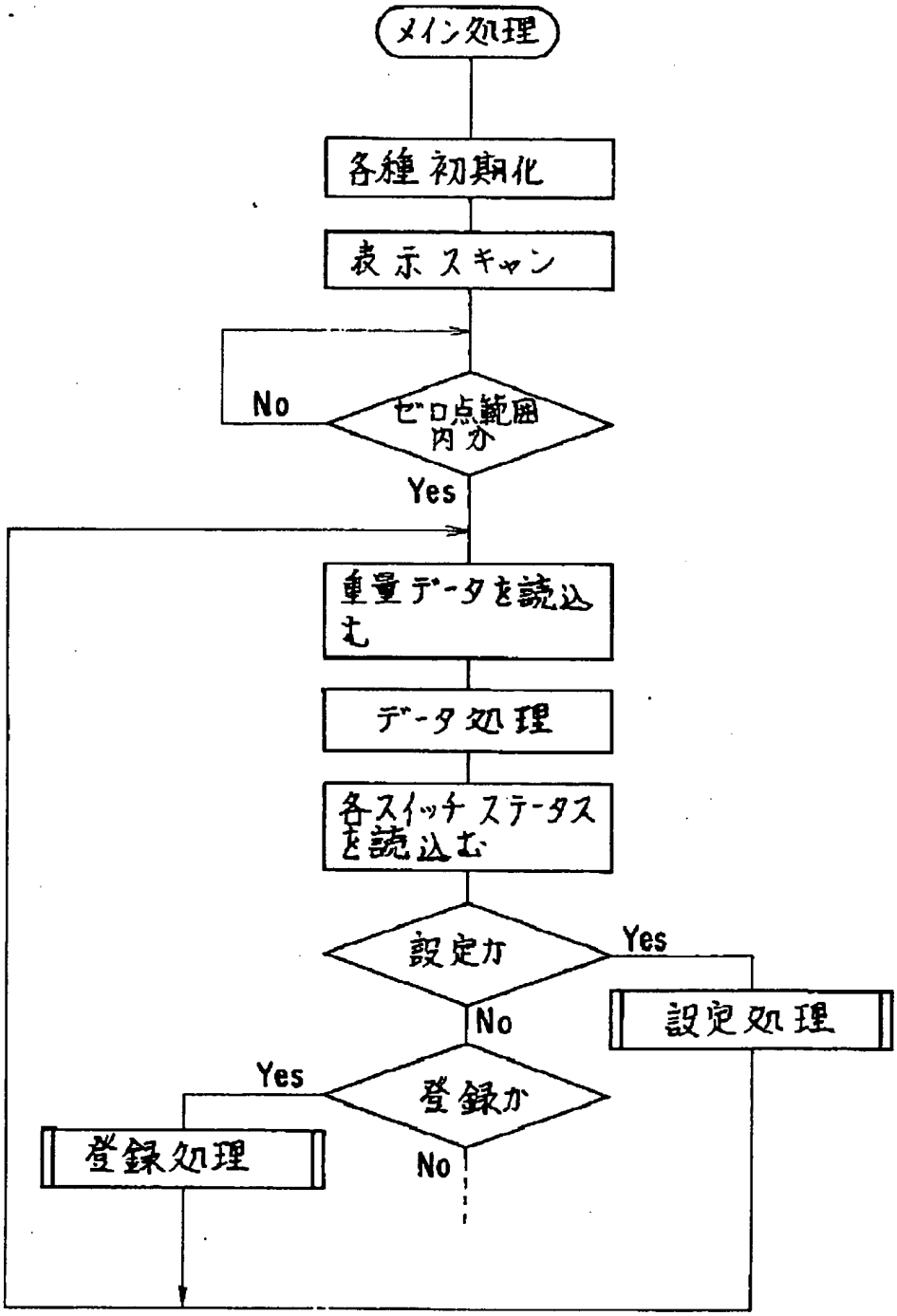
[Drawing 6]


33
4
34
11
包装物
3
10
ロードセル式
計量装置
16
9
17
8
7
27
21
32
S
S
24
26
22
20
S
18
VP
S
19
28
46
42
ガスボンベ
47
45

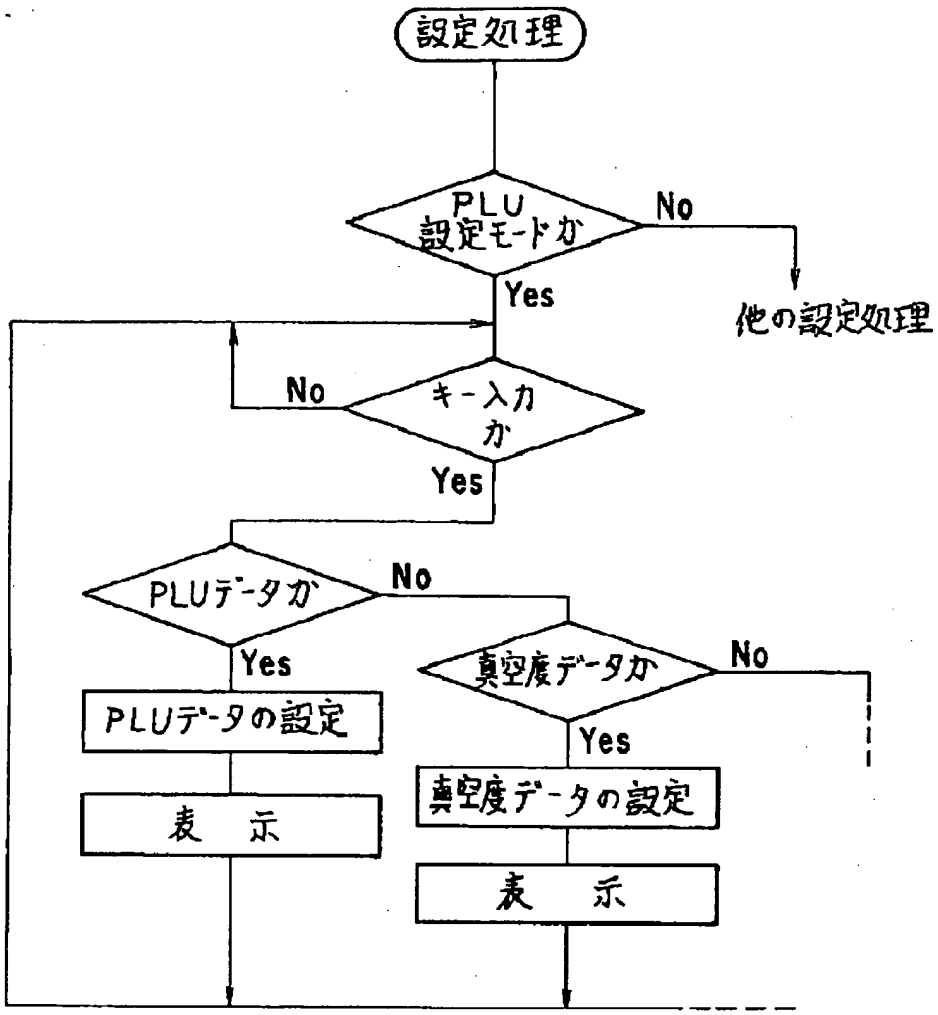
[Drawing 7]


CPU
ROM
RAM
I/O
I/O
A/D変換
表示コントローラ
プリンタコントローラ
キーボードコントローラ
ポンプコントローラ
シールタイマ
真空タイマ
真空破壊タイマ
ガスタイマ
VP
表示器
プリンタ
専用キーボード
計量装置
名種スイッチ
真空計
開閉機構
ガスボンベ
チャンバーへ
チャンバーへ
チャンバーへ
S
S
S
S
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
18
19
20
21
26
42
45
46
47
38
2e
2j
7
2a~2d, 2f~2h
2i

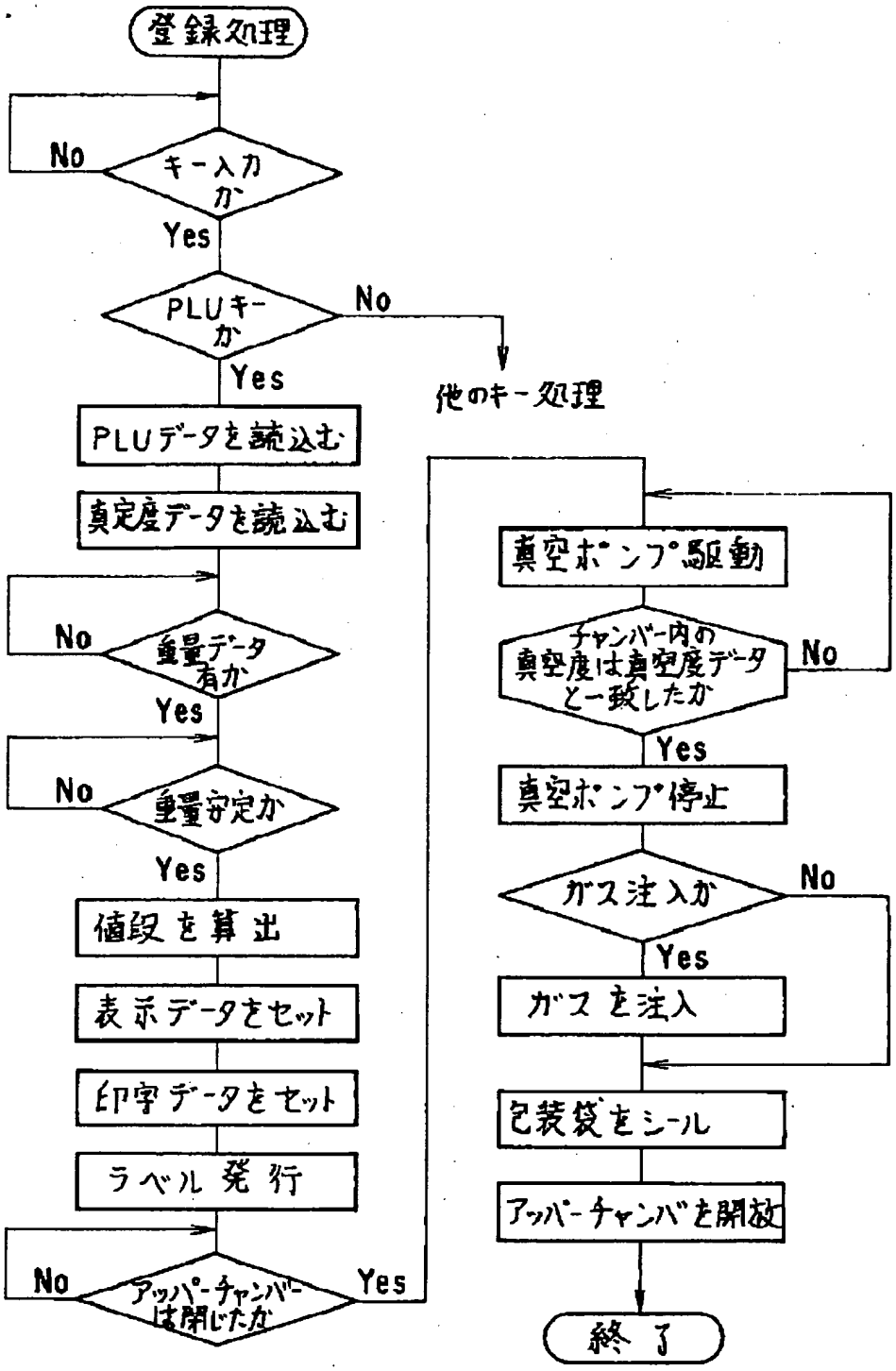
[Drawing 8]


メイン処理
各種初期化
表示スキャン
No
ゼロ点範囲内か
Yes
重量データを読込む
データ処理
各スイッチステータスを読込む
設定か
Yes
設定処理
No
登録か
Yes
登録処理
No

[Drawing 9]


設定処理
PLU
設定モードか
No
Yes
他の設定処理
No
キー入力
か
Yes
PLUデータか
No
Yes
真空度データか
No
PLUデータの設定
Yes
真空度データの設定
表　示
表　示

[Drawing 10]


登録処理
No
キー入力か
Yes
PLUキーか
No
Yes
他のキー処理
PLUデータを読込む
真空度データを読込む
No
重量データ有か
Yes
No
重量安定か
Yes
値段を算出
表示データをセット
印字データをセット
ラベル発行
No
アッパーチャンバーは閉じたか
Yes
真空ポンプ駆動
チャンバー内の真空度は真空度データと一致したか
No
Yes
真空ポンプ停止
ガス注入か
No
Yes
ガスを注入
包装袋をシール
アッパーチャンバを開放
終了